# A NEW SPECIES OF MARGINASTER (*ASTEROIDEA: PORANIIDAE*) FROM TASMANIA

A. J. Dartnall
*The Tasmanian Museum, Hobart*

(Plate xiii and Text-figures 1–2)

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*Synopsis*

A new species of *Marginaster* (Asteroidea: Poraniidae) is described and recorded from the littoral of S.E. Tasmania. It is compared with other members of the genus which are all known from offshore waters. Initial examination of the digestive system suggests that the species is a partial particulate feeder aided by mucous sheets.

## Introduction

The sea star genus *Marginaster* was first recorded from Australian waters by Miss A. M. Clark (1962) from a single specimen taken off Maria Island, Tasmania, by the 1929–31 B.A.N.Z.A.R. Expedition. Miss Clark described the specimen, but did not name the species, commenting on its resemblance to *Marginaster paucispinus* Fisher.

It is of interest to record a new species of *Marginaster* from the littoral of S.E. Tasmania.

Following the keys provided by Sladen (1889), Fisher (1911) and A. M. Clark (1962) the genus *Marginaster* appears to be the only one which will accommodate the species described below. Future studies will show whether its familial or generic placing is correct but it may be apposite to record that this author at first regarded this form as an aberrant member of the Asterinidae.

Subclass Asteroidea
Family Poraniidae Perrier
Genus Marginaster Perrier 1881

## Marginaster littoralis sp. nov.

(Pl. xiii; Text-figs 1–2)

*Description*

A bluntly stellate sea star; $R : r = 1{\cdot}5 : 1$; *br.* is approximately equal to R where the rays join the disc.

Actinal surface nearly plane, slightly tumid; abactinal surface convex, the interradial areas being slightly depressed and the arm bases slightly swollen. The body is covered with a thick, investing epidermis which conceals the skeletal plates. Details of skeletal structure are only apparent when the epidermis is cleared or macerated.

The plates of the abactinal surface form an open reticulum and a regular arrangement can be discerned at the centre of the disc (Fig. 1). Some plates of the disc and carinal areas carry up to seven spinelets but on the remaining abactinal plates there are rarely more than four spinelets. The spinelets of the disc and carinal areas are granular, between 0·25 and 0·5 mm. in length

and slightly broader at the base (*c.* 0·19 mm.) than at the blunt tip (*c.* 0·14 mm.). The spinelets of the abactinal surface are carried on a raised boss on each plate (Fig. 1).

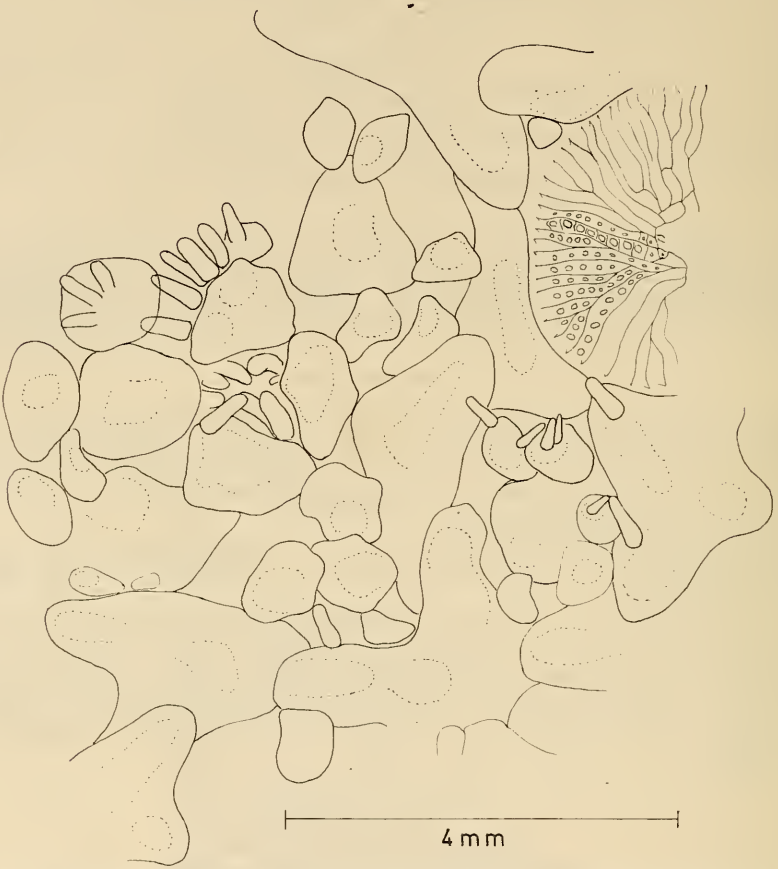



Fig. 1. *Marginaster littoralis* sp. nov. Arrangement of plates at centre of abactinal surface. Madreporite at top right. Plates denuded and raised bosses shown by broken lines.

Large papulae are placed singly in the skeletal meshes. In some large specimens a group of papulae is conspicuous near to the tip of the ray, accommodated in an open space without skeletal plates (Fig. 2).

The terminal plate of the ray is quite distinct and may carry up to ten spinelets.

The madreporite is interradial in position, just eccentric from the centre of the disc. It is slightly ovoid and about 1 mm. across its long axis.

The superomarginal plates are not distinct. The inferomarginals form a prominent fringing edge to the body, each bearing between two and five small pointed tubercles on the upper surface and a fan of two to four (most often three) webbed spinelets, up to 0·9 mm. in length, on the margin.

The plates of the actinal intermediate areas are slightly imbricate and small secondary ossicles may be present towards the margin. The actinal surface is more spinous in larger individuals but each plate rarely carries more than one spine. The skin covering the interradial actinal areas is

marked with furrows extending from the adambulacral plates to the margin and, in some specimens, partly on to the abactinal surface of the disc.

The adambulacral plates each have two furrow spines and one subambulacral spine. The furrow spines taper and may attain 0·94 mm. in length. The subambulacral spines vary between 0·7 and 0·9 mm. in length and are slightly broader at the base (*c.* 0·35 mm.) than the tip (*c.* 0·3 mm.). Flattening of the spines of the ambulacral armature is not significant. The oral plates carry two to three oral spines and may or may not carry a single suboral spine. Variation in suboral spinulation is observable between specimens and between oral plates of the same specimen.

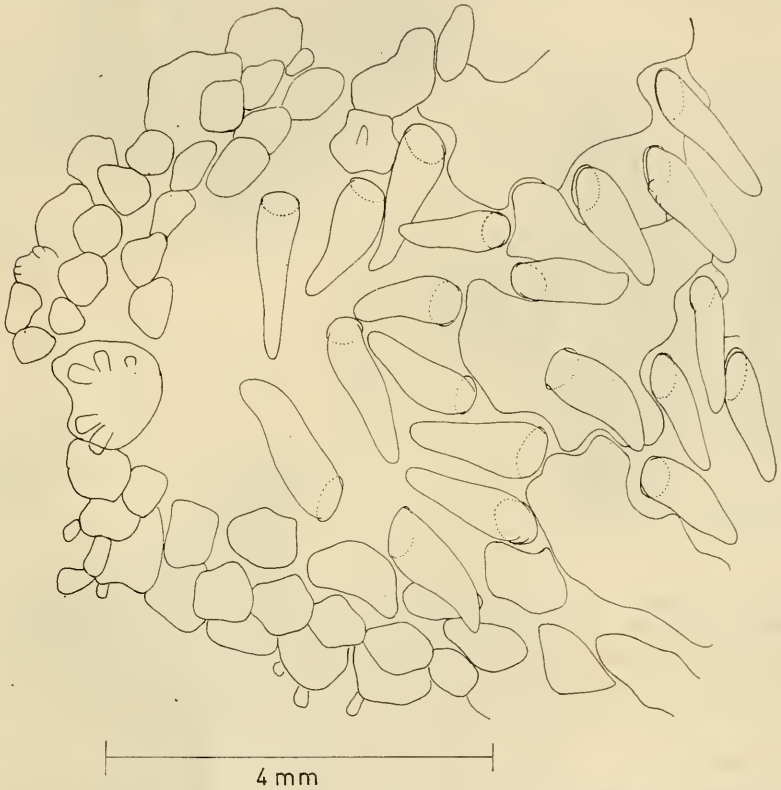



Fig. 2. *Marginaster littoralis* sp. nov. Tip of arm of specimen with papular tuft. Plates denuded. Terminal plate left centre.

*Colour.* When alive the animal is greenish brown on the abactinal surface bordered by an off-white band, defining the outline of the body. The actinal surface is off-white. Under low power magnification the epidermis of the abactinal surface appears bluish-green with brown pigmentation around the bases of the spinelets.

*Type locality.* Rocky midlittoral, near Powder Jetty, River Derwent, near Hobart, S.E. Tasmania.

*Holotype.* A dried specimen R = 17 mm. from type locality. 2.v.1969. Collected by A. J. Dartnall. Tasmanian Museum Reg. No. H 468.

*Paratypes.* Twelve spirit specimens from Cornelian Bay, River Derwent, S.E. Tasmania. 31.iii.1969. Collected by J. L. Hickman. Tasmanian Museum Reg. No. H 469.

Five spirit specimens from the type locality. 2.v.1969. Collected by E. Turner and A. J. Dartnall. Tasmanian Museum Reg. No. H 470.

Further paratypes are housed in the collections of the Australian Museum, Sydney (Australian Museum Reg. Nos. J 7733 and J 7734). Voucher material is also held by the British Museum (Natural History), London.

*Affinities*

*Marginaster littoralis* sp. nov. is most like *Marginaster capreensis* (Gasco) from European waters in possessing spinelets on the abactinal surface. However, the new species attains a larger size than other species attributed to the genus and the ambulacral and oral armature is quite distinct (see Table 1).

TABLE 1

*Oral and Ambulacral Spinulation of Species of Marginaster*

| Species | Maximum R (mm.) recorded | Number of oral spines | Number of suboral spines | Number of furrow spines per plate | Number of sub-ambulacral spines per plate | Source of information |
|---|---|---|---|---|---|---|
| *M. littoralis* sp. nov. | 17 | 2–3 | 0–1 | 2 | 1 | Type series |
| *Marginaster* sp. (cf. *M. paucispinus* Fisher) | 9 | 4 | 2 | 1 | 2 | A. M. Clark (1962) |
| *M. paucispinus* .. | 11 | 4 | 2 | 2–1 | 2 | Fisher, 1919 |
| *M. echinulatus* .. | 5 | — | — | 4–5 | 2–3 | Perrier, 1881 |
| *M. capreensis* .. | 11–12* | — | — | 2 | 2 | Sladen, 1889 *A. M. Clark (pers. comm.) |
| *M. pentagonus* .. | — | — | — | 1 | 2–3 | Fisher, 1919 |

Geographically its nearest relation is the specimen of *Marginaster* cf. *M. paucispinus* Fisher described by A. M. Clark (1962). Again the ambulacral and oral spinulation differs and that specimen, at R = 9 mm., possessed no actual spinelets. Also *M. littoralis* possesses a more dense and heavier skeletal structure than the other species attributed to the genus.

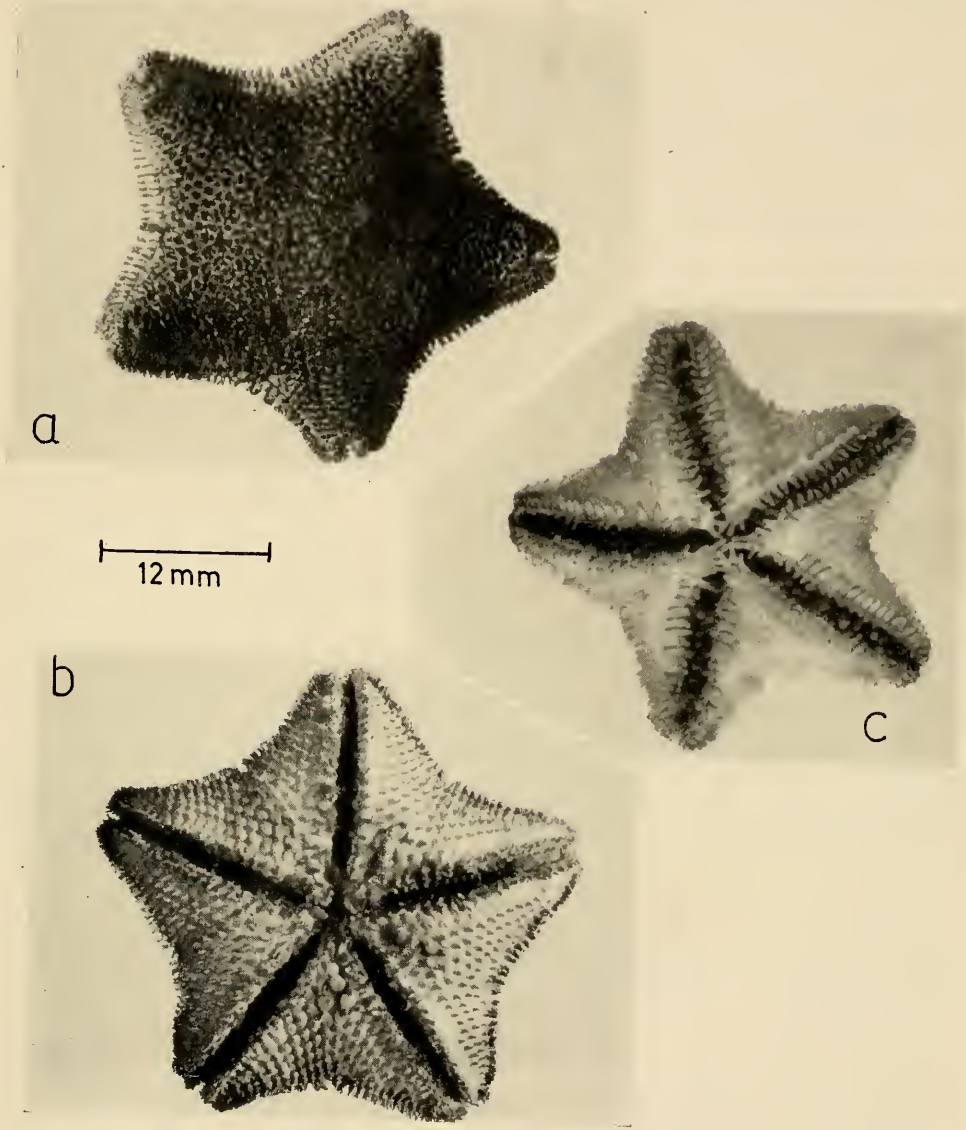
*Field identification*

*Marginaster littoralis* sp. nov. is found associated with the asterinid *Patiriella regularis* (Verrill) in the type locality and may, at first, be confused with that species. The pale fringing border to the body and the large papulae which extend far on to the distal areas of the interradii are good field characters with which to distinguish *M. littoralis*.

*Comments*

*Marginaster littoralis* sp. nov. is recorded from a mid-littoral habitat at both stations from which it is known. Other species of *Marginaster* are known from greater depths (Table 2).

*M. littoralis* has variable but distinct grooves in the epidermis of the actinal surface as is also reported by Miss A. M. Clark (1962) in *Marginaster capreensis*. Subsequent dissection of *M. littoralis* revealed prominent rectal caecae and large channelled Tiedemann's pouches below the digestive diverticula. The cardiac stomach is extensible and surface mucus is abundant


a
12 mm
b
c